

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A computer program product, tangibly embodied on a machine-readable storage device, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

displaying a user interface in a client program, the user interface having a plurality of controls, the plurality of controls including multiple types of controls, each control having a state and a control data structure;

for each control in the plurality of controls, storing the state of the control as a first state for the control in the control data structure;

receiving user input comprising a change to the state of a control in the plurality of controls;

updating the state of the control based on the user input;

storing the updated state of the control as a second state for the control in the control data structure;

receiving user input comprising a request to undo the change; and
restoring the state of the control to reflect the first state for the control.

2. (Previously Presented) The computer program product of claim 1, wherein the multiple types of controls include one or more of a text field control type, a radio button control type, a table control type, a tray control type, and a menu control type.

3. (Previously Presented) The computer program product of claim 1, wherein the state of the control includes a data state and a view state, and wherein the operations further comprise:

 determining whether the change affects the data state or the view state of the control; and

 restoring the state of the control only if the change affects the data state of the control.

4. (Previously Presented) The computer program product of claim 1, wherein the operations further comprise:

 receiving user input comprising a request to redo the change to the control; and
 restoring the state of the control to reflect the second state for the control.

5. (Previously Presented) The computer program product of claim 1, wherein the user input comprising the request to undo the change is received while focus is not on the control.

6. (Previously Presented) The computer program product of claim 1, wherein restoring the state of the control includes restoring a state of another control that shares data with the control.

7. (Cancelled).

8. (Previously Presented) The computer program product of claim 1, wherein restoring the state of the control occurs prior to transmitting the state of the control to a server.

9. (Currently Amended) A computer program product, tangibly embodied on a machine-readable storage device, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

generating a plurality of data structures that store application data and associations between the application data and a plurality of application controls, wherein the plurality of application controls are rendered based on the application data; detecting that at least one application control of the plurality of application controls ~~data structure of the plurality of data structures~~ has changed from a prior state to a new state;

recording the prior state of the at least one application control data structure; updating at least one of the plurality of data structures based on the new state; receiving user input requesting that an undo operation be performed; performing the undo operation by restoring the at least one application controls data structure to the prior state; and updating the at least one data structure based on the prior state.

10. (Previously Presented) The computer program product of claim 9, wherein the at least one data structure is at least one data tree.

11. (Previously Presented) The computer program product of claim 9, wherein the at least one data structure is stored on a client device.

12. (Previously Presented) The computer program product of claim 9, wherein the plurality of application controls include multiple types of controls.

13. (Previously Presented) The computer program product of claim 9, wherein the associations between the application data and the plurality of application controls are defined by metadata.

14. (Currently Amended) An apparatus comprising:
means for displaying a user interface in a client program, the user interface having a plurality of controls, the plurality of controls including multiple types of controls, each control having a state and a control data structure;
means for, for each control in the plurality of controls, storing the state of the control as a first state for the control in the control data structure;
means for receiving user input comprising a change to the state of a control in the plurality of controls;
means for updating the state of the control based on the user input;
means for storing the updated state of the control as a second state for the control in the control data structure;
means for receiving user input comprising a request to undo the change; and
means for restoring the state of the control to reflect the first state for the control.